Semantic Mapping of Embodied Attention

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Studying embodied attention

- Embodiment of cognition (Ballard, Hayhoe et al. 1996)
- Eye movements and multisensory artefacts involved in affordance based cue organisation
- Multisensory information binding in sensory-motor behaviors
- Activation focus in response organisation
- Cognitive processing model following (Sergeant et al. 2000)
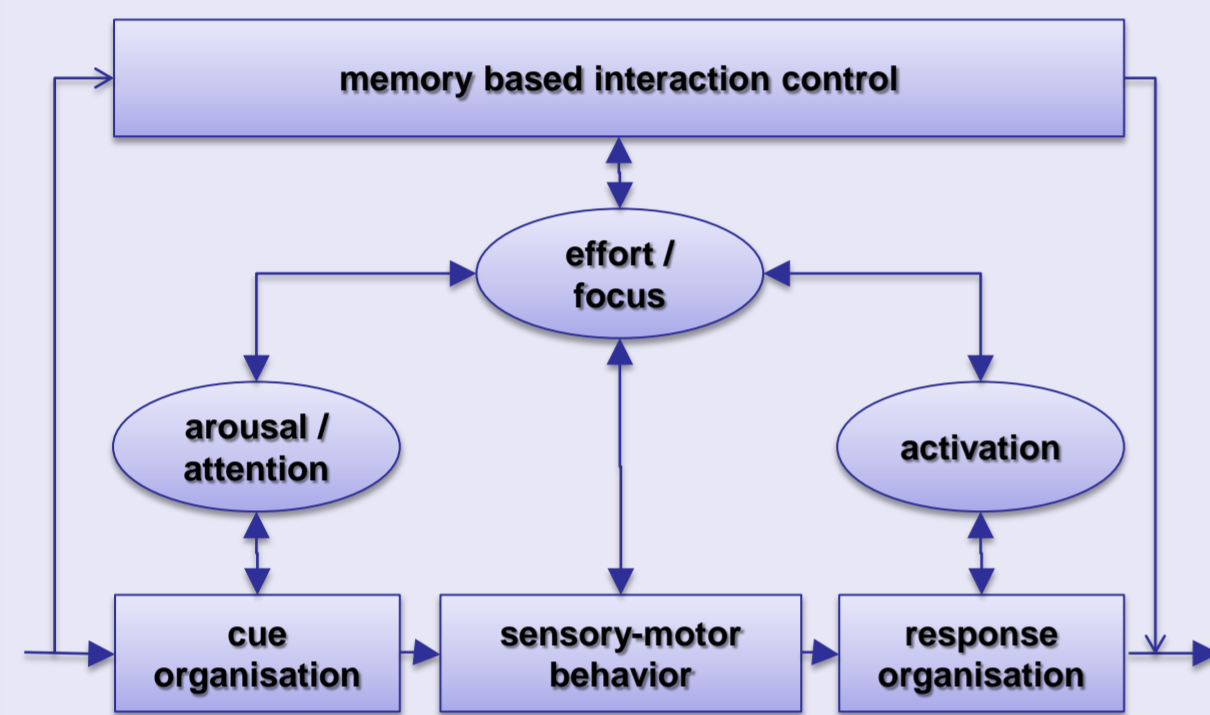

Wearable multisensory human factors

- Wearable miniaturized hardware for the estimation of human factors where the task takes place
- Eye-tracking glasses for measurements with high usability
- Bio-signal measurements for the estimation of emotion & stress
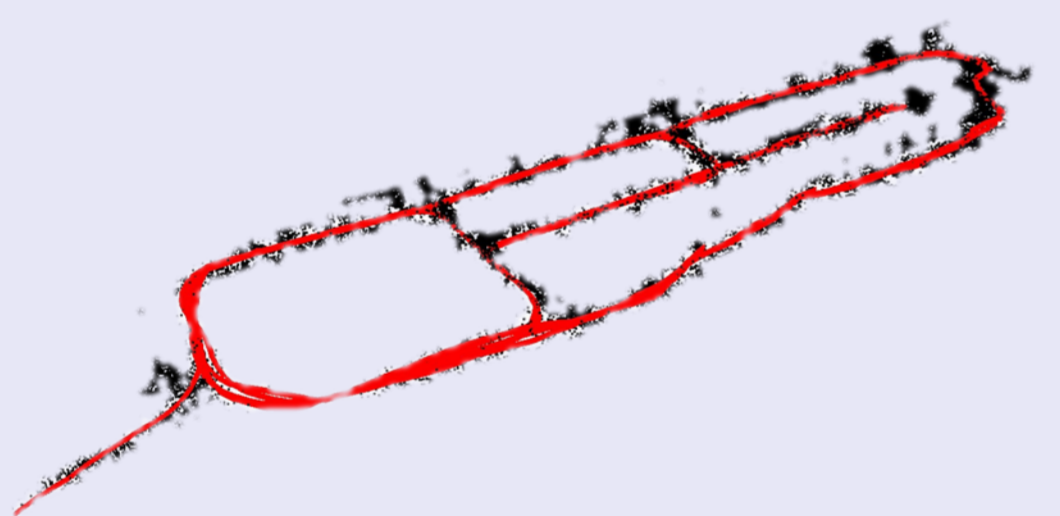- Intelligent information fusion

## Attention mapping into environment

- Gaze recovery in 3D
- Activity, emotion and stress mapping
- Semantic mapping of pedestrian attention (ICIP 2010)
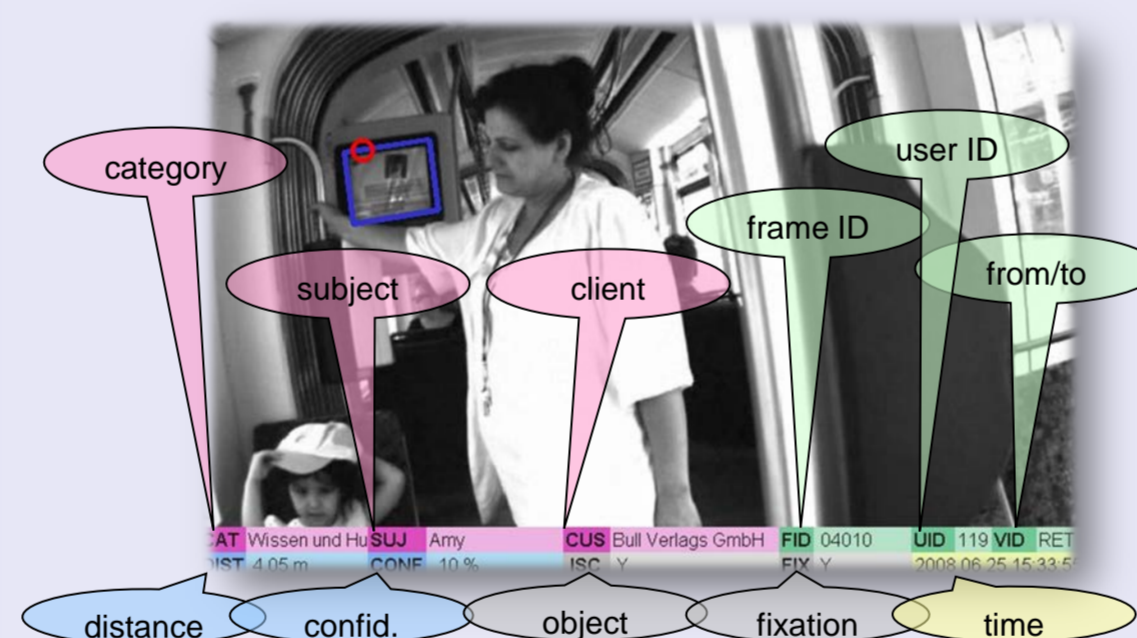- Study of human embodied cognition
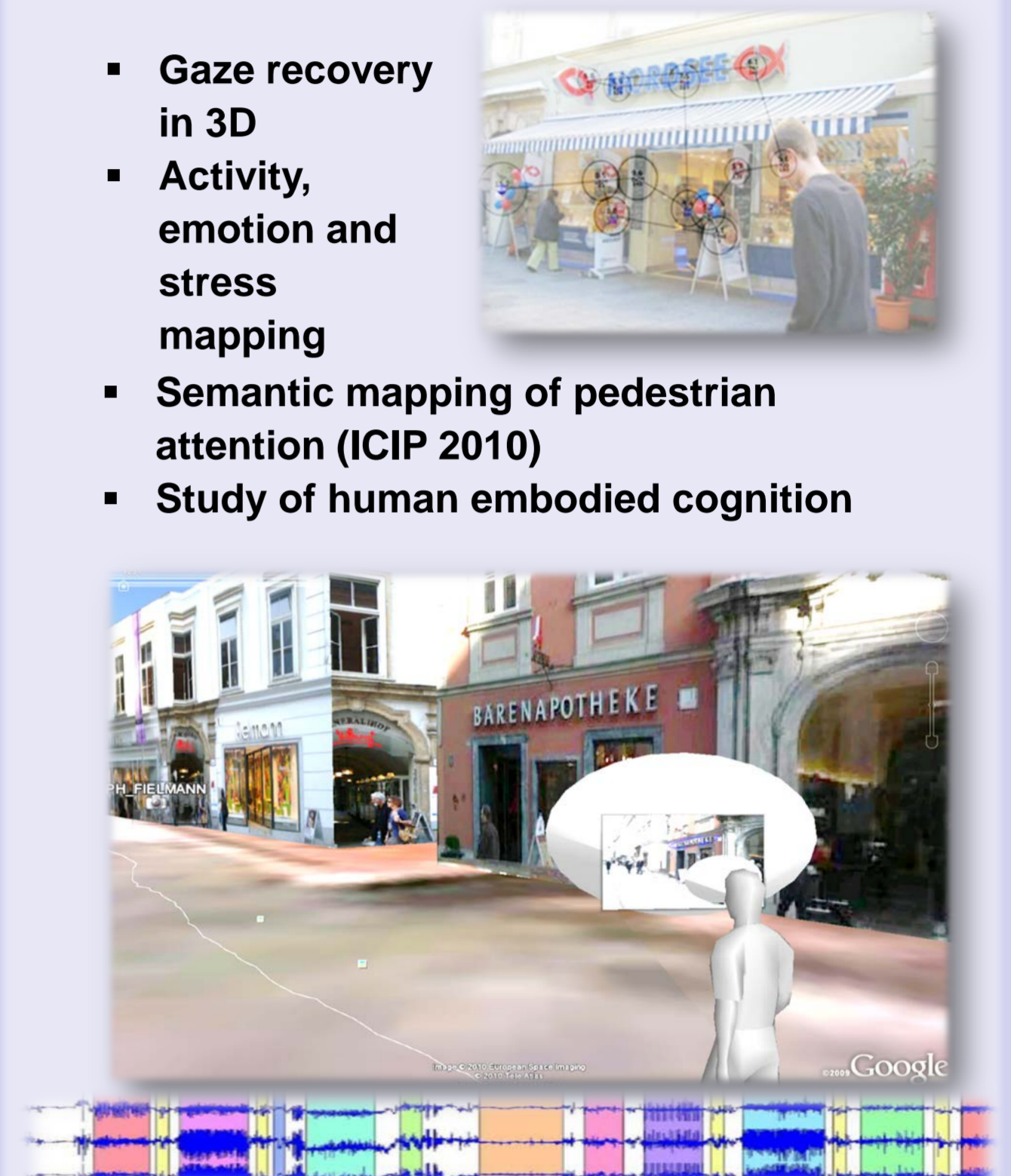

Vision based 6-DOF mapping

- SLAM and re-localization
- 3-D point map
- Loop closure based correction
- 6-DOF sensor pose
- 3-D voxel grid & textured surface
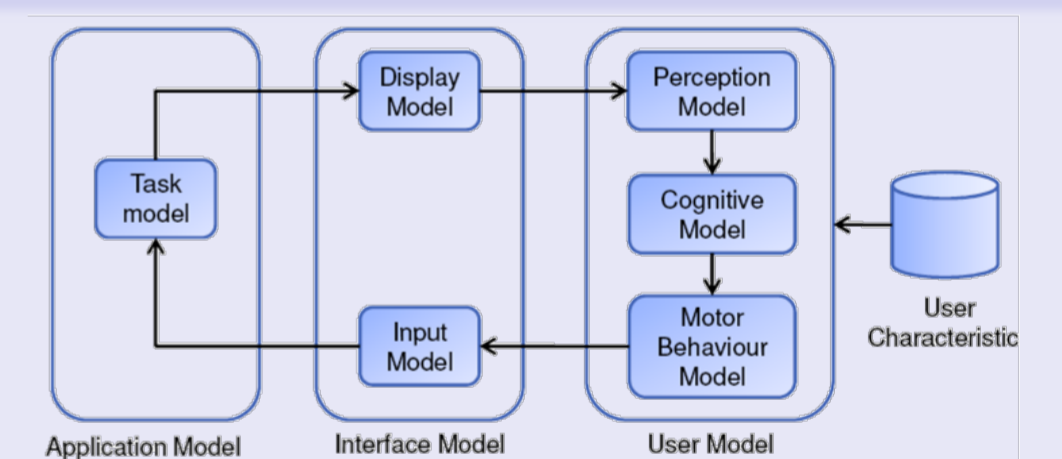- BMVC, IROS 2011
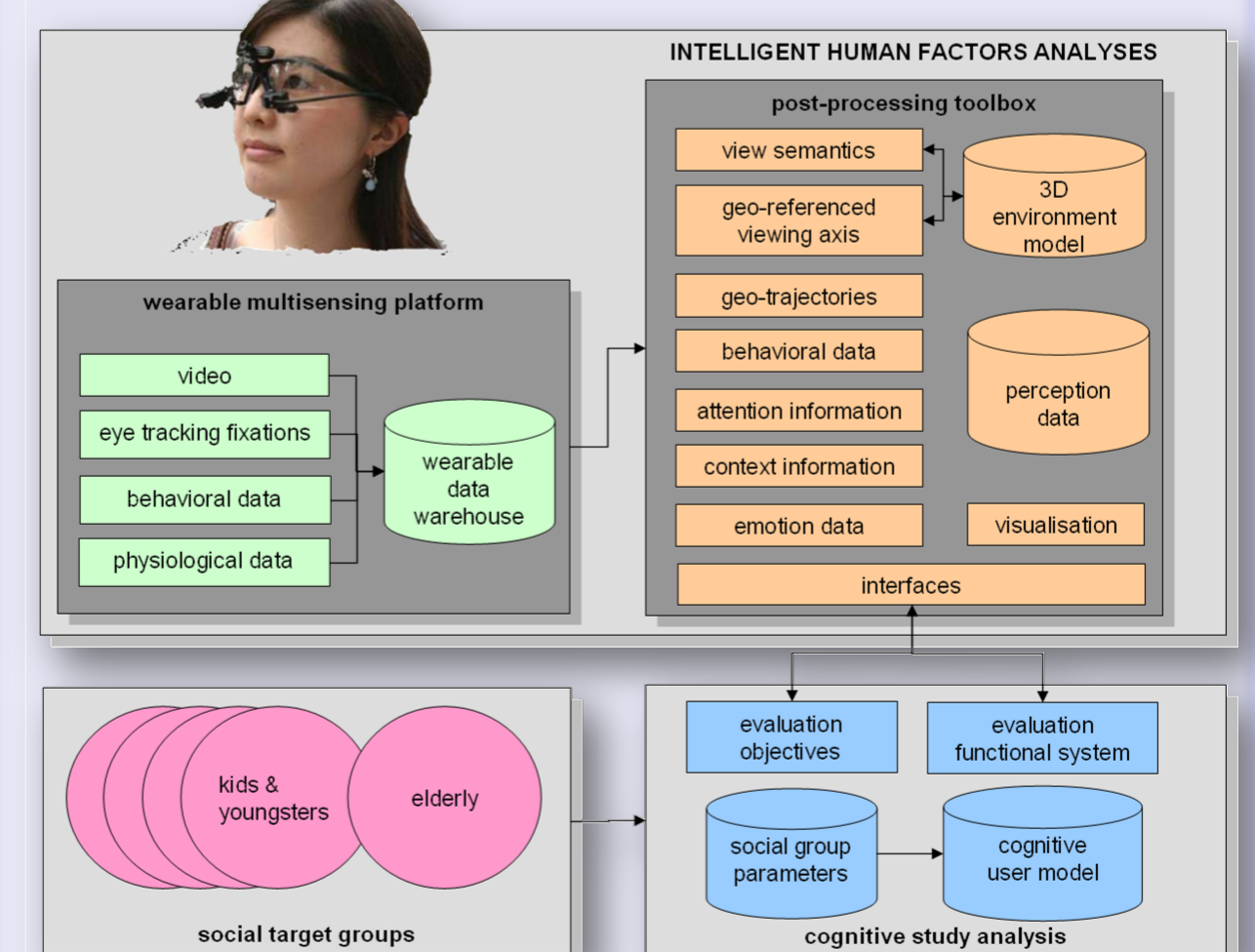- Gaze projects into world model
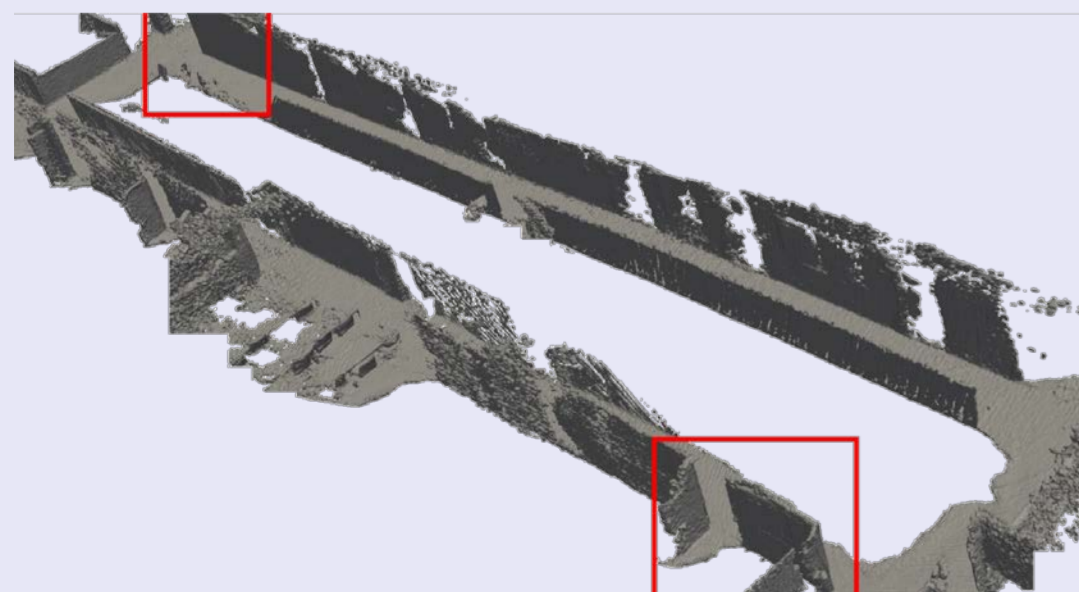
Semantic annotation of attention

- Object detection
- Visual context awareness
- Automated annotation in usability studies (Pervasive Advertising 2011)
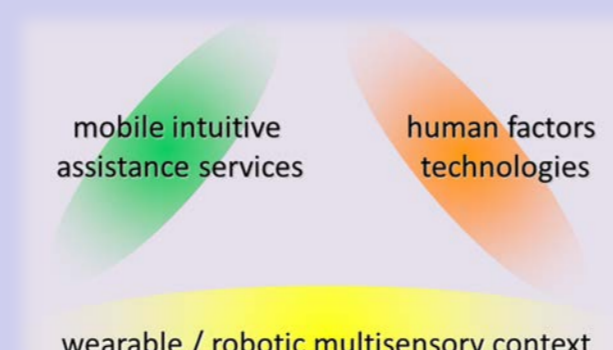- Evaluation of attention processes
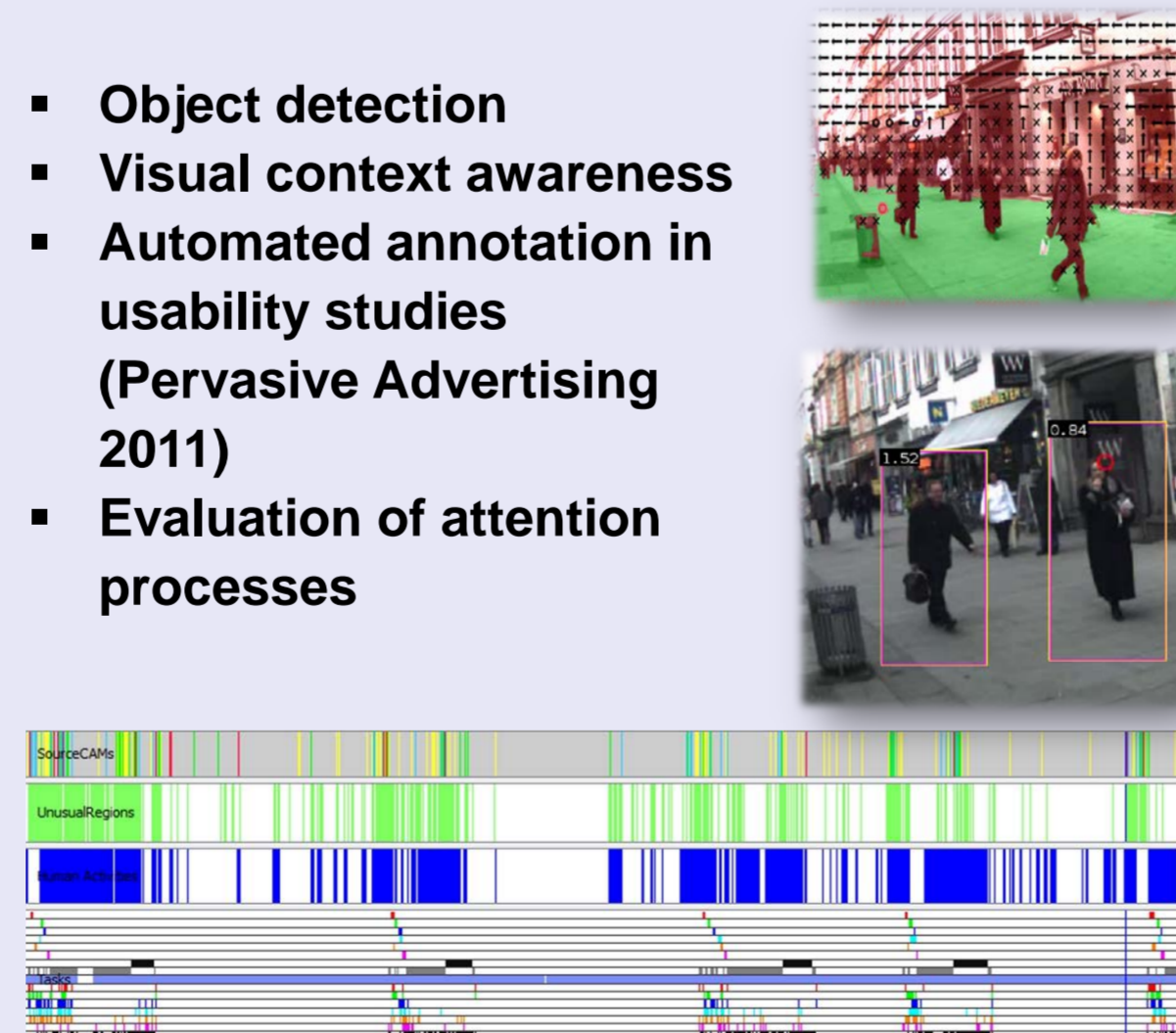
Computational user model

- Perception model for simulation
- Target user groups (INTERACT 2011)
- Parameterized crowd models

- Wearable & robotic multisensory context
- Mobile intuitive assistance services
- Human factors technologies and studies
- eInclusion services in AAL and for immigrants